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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

February 18, 1998

EX PARTE

Ms. Magalie R. Salas, Secretary
Federal Communications Commission
1919 M Street NW, Room 222
Washington, D.C. 20554

Re: Docket No. 96-111 and
FCC file No. 60-SAT-ISP-97
Ex Parte Presentation

Dear Ms. Salas:

This letter reports that James Cuminale of PanAmSat Corporation; Henry Goldberg of this firm; Dr. Bruce Owen and Dr. Henry McFarland of Economists, Inc.; and Dr. Leonard Waverman and Jae Harris of LECG, Inc. met today with Mindy Ginsburg, Douglas Webbink, Daniel Connors, Linda Haller and Sandy Taxili of the International Bureau and Michael Riordan, Chief Economist of the FCC and Marilyn Simon of his staff to discuss issues involved in the above-referenced proceeding.

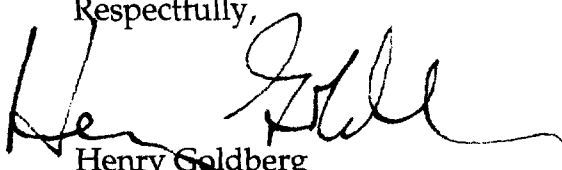
The items discussed are in part reflected in written submissions by PanAmSat that already are part of the record. Additionally, PanAmSat submitted an economic study prepared by Economists, Inc. and an economic study prepared by LECG, Inc., dealing with the issues of Intelsat and Comsat market power, copies of which are attached hereto.

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Ms. Magalie R. Salas, Secretary
February 18, 1998

If there are any questions in this regard, please contact the undersigned.

Respectfully,


Henry Goldberg
Attorney for PanAmSat Corporation

Attachments

cc: Michael Riordan
Marilyn Simon
Mindy Ginsburg
Douglas Webbink
Daniel Connors
Linda Haller
Sandy Taxili

Market Power, Market Foreclosure, and INTELSAT

Analysis prepared for
PanAmSat by
Economists Inc.
February 16, 1998

Market Power, Market Foreclosure, and INTELSAT

Executive Summary

- This paper has four main conclusions:
 - Foreign PTTs have significant incentives to favor INTELSAT over independent satellite systems.
 - The PTTs continue to restrict market access for independent satellite systems.
 - INTELSAT as currently structured still has significant market power.
 - A reorganization of INTELSAT into more than one satellite company with, at most, very limited affiliation to PTTs that can control market access would be competitively preferable to alternative methods of privatization.
- Reasons why foreign PTTs favor INTELSAT.
 - PTTs, who are often the INTELSAT signatories, are still largely government owned. Thus, for reasons of inertia or loyalty they may favor INTELSAT under conditions where a profit maximizing firm would not. Although many PTTs have been privatized, for the near future most are likely to continue to be owned by governments.
 - More important, because they are not members of the PTT "club" and deal directly with end-users whenever possible, independent satellite systems threaten the monopoly position of the PTTs.
 - Independent satellite system's facilities may be used to bypass the facilities of the PTT.
 - The independent satellite system's activities may enable consumers to establish a benchmark that exposes the monopoly power and excessive pricing of the PTT. That may lead customers to push for lower rates and perhaps even to for structural reform that would end the PTT's monopoly.
 - Once an independent satellite system is established in a country, both the independent system and the PTT's customers

have incentives to lobby the local authorities to open up more services to competition. By contrast, INTELSAT will not lobby against the interests of its signatories.

- PTTs continue to restrict the growth of independent satellite systems.
 - Monopoly PTTs continue to control access to a significant amount of international telecommunications traffic. For most of INTELSAT's members, the signatory or a related government agency makes decisions on market access.
 - Independent international satellite systems have been able to carry very little telephony traffic, the type of satellite traffic that is of primary concern to the PTTs. Telephony accounts for half of INTELSAT's traffic but only 1% of PanAmSat's traffic.
 - Independent satellite systems face fewer restrictions from INTELSAT and its signatories in video than in telephony. Nonetheless, in many cases PTTs and their governments have erected significant regulatory and legal barriers to the carriage of video traffic, particularly occasional video traffic.
 - Although the increased realization of the importance of competition and U.S. attempts to negotiate broader market access through the World Trade Organization promise to reduce these problems, it will be a long time before they eliminate them.
- INTELSAT still has significant market power.
 - Fiber optic cable has not eliminated INTELSAT's market power in telephony. Some countries still are not served by fiber optic cable. Other countries have some fiber optic service but still must use satellite for some international telephony. For example, if a country has only one cable landing, customers in that country need to have satellite circuits available so telephone service is not disrupted in the event of cable failure.
 - INTELSAT has market power in markets for occasional video services that require transmissions across the Atlantic, Indian, or Pacific Oceans. Moreover, in full-time video markets, INTELSAT's large share, high concentration, and high barriers to entry suggest a significant risk that INTELSAT still may have market power.
- INTELSAT should be privatized as several entities without significant ownership by PTTs that control market access.

- Were INTELSAT now already two or more entities, it is very unlikely that those entities would be allowed to combine under U.S. antitrust laws.
- All significant economies of scale could be preserved if INTELSAT were divided into three entities.
- Allowing PTTs that control access to their national telecommunications markets to own a significant share of the successor to INTELSAT risks significant competitive harm and offers no offsetting benefits. Leaving PTTs as substantial owners of INTELSAT or a single spin-off would invite them to continue to foreclose markets from competing satellite systems. Furthermore, an international satellite system that was largely owned by PTTs almost surely would not promote competition and improved market access for U.S. firms. There is no evidence that allowing PTT ownership of INTELSAT results in any significant efficiencies.

I. Introduction

The United States currently is reevaluating its international satellite policy. Among the issues central to this reevaluation are the extent of the market power that INTELSAT and its signatories have and how they exercise that power. In particular, an issue has arisen as to the relationship that INTELSAT has to U.S. efforts to encourage competition in foreign telecommunication markets and to gain access to those markets for U.S. firms. INTELSAT's signatories, the entities that actually own INTELSAT, include many foreign Post Telephone and Telegraph authorities (PTTs). These PTTs are often state-owned monopolies. Independent international satellite providers have long complained that INTELSAT and these PTTs have excluded them from certain markets and delayed their entry and raised their costs in others.¹ Moreover, concerns have been expressed that the current structure of INTELSAT may be making it easier for PTTs to keep competition out of their telecommunications markets and impede attempts to increase access to foreign markets.

These considerations have important implications for the proposed privatization of INTELSAT. Although there is widespread agreement that INTELSAT should be privatized, there is substantial disagreement as to how. If INTELSAT has significant market power, and if its current relationship to foreign PTTs is impeding efforts to increase competition and market access, then there is good reason for policy-makers to use the present discussion of privatization to make more fundamental changes in INTELSAT's structure. INTELSAT could be divided into several different entities, and the foreign PTTs that control access to their national telecommunications markets could be prevented from owning a significant share of INTELSAT. Legislation recently introduced in Congress embodies this approach. It calls for INTELSAT to be divided into several entities if needed to create fully competitive markets, and it would prevent signatories or former signatories

¹ For a discussion of anticompetitive strategies to raise rivals' costs, see S. C. Salop and D. T. Scheffman, "Raising Rivals' Costs," *American Economic Review*, vol. 73, (May 1983), pp. 267-271.

that control access to telecommunications markets from owning any part of the successors to INTELSAT.²

A recent paper written by Professor Marius Schwartz and supported by Comsat, however, argues that concerns about INTELSAT's market power and market foreclosure have little merit.³ The Schwartz paper contends that foreign PTTs have little or no incentive to favor INTELSAT over independent satellite providers. The paper also argues that INTELSAT has little or no relevance to the difficulties that U.S. firms experience in gaining access to foreign telecommunications markets. Moreover, the paper contends that INTELSAT currently faces substantial and growing competition. Not surprisingly, the paper suggests that while INTELSAT should be "privatized," there is no reason to divide INTELSAT into several different entities or to restrict PTT ownership of INTELSAT.

This paper examines Schwartz's analysis and assumptions and reaches very different conclusions. First, foreign PTTs often have significant incentives to favor INTELSAT over independent satellite systems, and those incentives stem directly from the PTTs' desire to protect their domestic monopolies from competition from U.S. and other firms. Second, the behavior of the PTTs is consistent with those incentives; in fact they rarely, if ever, deal with independent satellite systems. Third, INTELSAT as currently structured still has significant market power. Thus, a reorganization of INTELSAT into more than one satellite company with at most very limited affiliation to PTTs that can control market access would be competitively preferable to alternative methods of privatization.

² H.R. 1872, in the House of Representatives, introduced June 12, 1997.

³ Marius Schwartz, "Competition in International Satellite Services: Whither INTELSAT Restructuring?" Georgetown University, November 19, 1997.

II. PTTs have anticompetitive incentives to favor affiliated systems.

A. Monopolists' incentives to foreclose competition in related markets

Schwartz's analytical framework is premised on the theory that a profit maximizing firm with a monopoly in one market will have no reason to foreclose competition in a related market because the monopolist can extract all the profits available from its monopoly by charging high prices in its monopoly market. He concludes, therefore, that a PTT with a monopoly over access to local consumers has no reason not to deal with the international satellite system that offers the lowest cost.

Schwartz considers only two possible reasons why a PTT might want to foreclose independent satellite systems. The PTT might be regulated in a way that restricts its ability to extract monopoly profits from local consumers, and foreclosing other markets may enable the PTT to evade such regulation. For example, if regulation requires a firm to charge prices that are based on its costs, it may profit by purchasing inputs from a subsidiary at artificially high prices. As a result, its costs may appear higher to the regulator, who as a result will allow it to charge higher prices to its customers. Schwartz disposes of this possibility by noting that most foreign PTTs are not subject to cost-price regulation and that INTELSAT's structure makes it poorly suited to regulatory evasion.

Schwartz also admits the possibility that PTTs engage in market foreclosure for non-profit maximizing reasons. PTTs generally are not profit-maximizing firms; they are often state-owned entities that are not responsible to shareholders and that may receive only limited oversight from their governments. The significance of government ownership of INTELSAT signatories is shown in Table 1. Over 54% of INTELSAT is owned by signatories that are in turn majority owned by their respective governments.

Table 1: INTELSAT Signatories by Share of Government Ownership		
Share Owned	Number of Signatories	Share of INTELSAT
100%	96	31.8%
50% $\leq x < 100\%$	24	22.9%
0% $< x < 50\%$	12	9.4%
0%	10	35.9%

Thus, PTTs may favor INTELSAT under conditions where a profit maximizing firm would not. For example, PTTs may favor INTELSAT simply out of inertia. Alternatively they may feel a sense of loyalty to INTELSAT, which they own in part and which may have provided training and technical assistance in the past. Thus, they may favor INTELSAT feeling that it is part of their "club." Schwartz dismisses these concerns, suggesting that the trend towards privatization of PTTs will diminish their significance. Although many PTTs have been privatized, as Table 1 shows, most continue to be owned by governments, and there is no reason to expect that to change in the near future.

Furthermore, Schwartz ignores several other reasons that are recognized in the economics literature for a monopolist in one market to want to use its power to weaken or eliminate competition in a related market. Some of these reasons are described below.

The monopolist may want to eliminate R&D competition.⁴ When there is independent competition in the related market, there are likely to be rivalrous R&D efforts as firms try to develop new products or to lower production costs so that they can draw customers away from competitors. By foreclosing rivals from the related market, the monopolist is able to obtain control over the R&D process in that market, reducing R&D efforts and increasing its profits.

The monopolist may want to exclude competitors in the market for a complementary good to raise prices to purchasers of that product who do not

⁴ Jay Pil Choi, "Preemptive R&D, Rent Dissipation, and the 'Leverage Theory,'" *Quarterly Journal of Economics*, 111(4), November 1996, pp. 1153-1181.

buy the product that it monopolizes.⁵ By eliminating competitors in the related market, the monopolist can raise prices in that market. This increases the monopolist's profits because it can extract monopoly profits from customers in the related market that would be beyond its reach if it could only increase the price of its core monopoly product. Even if the monopolist does not actually eliminate its competitors, it may profit by tying its monopolized product to the complementary good, because that strategy can cause other suppliers to compete less vigorously.⁶

The monopolist might use tying to engage in price discrimination.⁷ By foreclosing rivals from the related market, the monopolist gets control over two prices and may obtain more direct contact with downstream customers. The monopolist may then be able to identify customers with more inelastic demand curves and design pricing structures that extract additional monopoly profits from these customers.

Finally, a monopolist may find that foreclosing a second market reduces the threat of entry of new competition into the market that it originally monopolized.⁸ The latter incentive for anticompetitive market foreclosure is likely to be very important in the case of the PTTs. Independent satellite systems threaten the monopoly positions of PTTs in several ways. Because of that threat, foreign PTTs may have strong incentives to discourage the growth of independent systems and limit their access to local customers.

⁵ M. D. Whinston, "Tying, Foreclosure, and Exclusion," *American Economic Review*, 80(4), September 1990, pp. 837-859.

⁶ J. Carbajo, D. DeMeza, and D.J. Seidman, "A Strategic Motivation for Commodity Bundling," *The Journal of Industrial Economics*, 38(3), March 1990, pp. 283-298.

⁷ R. P. McAfee, J. McMillan, and M. D. Whinston, "Multiproduct Monopoly, Commodity Bundling, and Correlation of Values," *Quarterly Journal of Economics*, 106(2), May 1989, pp. 371-383.

⁸ This possible anticompetitive effect of foreclosure has long been recognized in the economics literature, see e.g., W.S. Comanor, "Vertical Mergers, Market Power, and the Antitrust Laws," *American Economic Review*, 57(2), May 1967, pp. 259-262. Fear of this type of anticompetitive effect was one of the motivations of a recent complaint issued by the Federal Trade Commission, "In the Matter of Eli Lilly and Company," Docket No. C-3594, ¶13 (e), July 28, 1995.

B. How independent satellite systems can threaten PTTs' monopolies

Independent satellite systems have a different customer orientation from that of INTELSAT. INTELSAT exists primarily to sell wholesale satellite services to its signatories. Even though 73 countries, not including the United States, now allow parties other than the signatory to access INTELSAT, signatories still account for the bulk of INTELSAT's business. Moreover, even in countries that allow non-signatories access, INTELSAT does not solicit end users or provide end to end services.⁹ By dealing directly with customers, independent satellite systems threaten the position of the PTTs in three ways.

First, their facilities may be used to bypass the facilities of the PTT. For example, a firm with a Very Small Aperture Terminal (VSAT) network serving several locations within a country may use that network to carry intra country calls that otherwise would have gone over the lines of the PTT. Thus, the presence of the independent satellite system may have a direct effect in reducing traffic on the PTT.

Second, the independent satellite system's activities may enable consumers to establish a benchmark that exposes the monopoly power and excessive pricing of the PTT. A customer who discovers that a call carried by an independent satellite system over a distance of thousands of miles is cheaper than a call carried by the PTT over a much shorter distance is likely to use that comparison to push for lower rates from the PTT, and perhaps even to push for structural reform that would end the PTT's monopoly.

Third, once an independent satellite system is established in a country, both the independent system and the PTT's customers have incentives to

⁹ The number of countries allowing direct access is from testimony of Regina Keeney, Chief International Bureau Federal Communications Commission, Before the House Subcommittee on Telecommunications, Trade, and Consumer Affairs of the House Commerce Committee, September 30, 1997, p. 14. The different orientation of INTELSAT and the independent satellite systems is also noted in Schwartz, op. cit., p. 24.

lobby the local authorities to open up more services to competition, so it can compete in additional markets. Such efforts are a clear threat to the PTT. By contrast, INTELSAT will not lobby against the interests of its signatories.

For example, the U.S. Congress is currently considering legislation to allow domestic entities other than Comsat, the U.S. signatory, direct access to INTELSAT and Inmarsat. (Inmarsat is an international satellite organization that provides satellite communications facilities chiefly for maritime and land mobile use.) Comsat apparently takes advantage of its monopoly position to charge very high margins over its costs of acquiring INTELSAT and Inmarsat services.¹⁰ There are instances of Comsat's charging prices that are 250 percent higher than the INTELSAT Utilization Charge for that service, even though Comsat itself was providing no facilities to its customer.¹¹ Were INTELSAT a profit-maximizing firm, it probably would be eager to sell its services through several entities, rather than deal with only one firm that was charging very high mark ups. Nonetheless, INTELSAT appears to have taken no steps to encourage the U.S. government to allow direct access.

In short, government-owned monopoly PTTs have several good reasons to limit the activities of independent satellite systems in their countries. These systems threaten to reduce their revenues by promoting bypass and to increase political threats to the PTTs' protected position. The latter consideration is significant as political pressures to privatize PTTs from other sources increase.¹² Thus, it should come as no surprise that PTTs do whatever they can to discourage the growth of independent satellite systems, which would further encourage the trend to increased competition.

¹⁰ Testimony of Jack Gleason before the Subcommittee on Communications, Committee on Commerce, Science, and Transportation, July 30, 1997; and Testimony of Joanne Suppa, President IDB Mobile Communications, Inc., Before the House Subcommittee on Telecommunications, Trade, and Consumer Affairs of the House Commerce Committee, September 30, 1997.

¹¹ Comments of WorldCom, Inc., In the Matter of Comsat Corporation, Before the Federal Communications Commission, File No. 60-SAT-ISP-97, June 16, 1997, p. 4.

¹² Since 1984, 44 countries have privatized their PTTs. International Telecommunication Union, *World Telecommunication Development Report, 1996/97*, p. 2.

As the next section shows, the anticompetitive incentives that PTTs have to attempt to discourage the growth of the independent satellite systems were powerful enough to affect their behavior.

III. PTT Restrictions on Independent Satellite Systems

A. Attempts to restrict the growth of independent satellite systems

Monopoly PTTs continue to control access to a significant amount of international telecommunications traffic. A recent General Accounting Office (GAO) report found "data from the FCC show that for 71 percent of INTELSAT's members, the signatory is also the regulatory authority making decisions on licensing, spectrum allocation, and market access and that for another 14 percent, the signatory is separate but 'related.'"¹³ Independent satellite systems have long complained that the signatories were using their authority to favor INTELSAT. The GAO notes that the independent systems complain that the signatories restrict them

in a variety of ways, including (1) authorizing earth stations only if they serve INTELSAT's satellites, (2) assessing prohibitively high tariffs on the smaller earth stations often used by private satellite systems, (3) prohibiting alternative systems' interconnection with the countries' telephone network, and (4) denying or restricting access to necessary radio spectrum within the countries for the transmission of satellite signals.¹⁴

Besides these activities of the signatories, INTELSAT itself was structured to inhibit market entry by independent systems. The INTELSAT agreement included a requirement that the countries who were parties to the agreement and their signatories "consult" with INTELSAT before approving separate satellite systems to avoid significant economic harm to INTELSAT. This economic harm test was in effect until it was waived in April 1997.

¹³ General Accounting Office, "Competition Issues in International Satellite Communications," GAO/RCED-97-1, October 1996, p. 45.

¹⁴ *Ibid.*, p. 30.

Schwartz's paper argues that this test may have served merely to protect countries' investments in INTELSAT. Schwartz, however, has no evidence that this economic harm test was needed to protect those investments nor that the imposition of this constraint promoted economic efficiency.¹⁵

Further, there is evidence that INTELSAT and its signatories have actively tried to impede the start of competing systems. Columbia Communications, for instance, states that it "spent eight years overcoming the extensive regulatory obstacles and financial hurdles necessary to create a competitive international satellite system."¹⁶ Much of this time was spent dealing with obstacles erected by INTELSAT and its signatories.¹⁷

Nonetheless, Schwartz suggests that fears that these signatories can and will use their control to favor INTELSAT are exaggerated. He notes that a number of independent satellite systems, such as PanAmSat and Orion, have been able to attract significant amounts of traffic. He also notes the expansion of fiber optic cable capacity and its increasing role in carrying international telephone traffic. He suggests that these phenomena indicate that PTTs are unable to shield INTELSAT from competition. Certainly, independent satellite systems and fiber optic cable has attracted certain types of traffic. Nonetheless, the fact remains that PTTs have restricted a great deal of other traffic to INTELSAT.

¹⁵ Schwartz also doubts the practical effect of the test, noting that PanAmSat's service to Latin America was ratified by INTELSAT's Assembly of Parties in 1987. PanAmSat, however, had to wait eleven months after it applied to INTELSAT for authorization for its request to be approved. Application was made to INTELSAT by a letter, dated May 15, 1986, from Diana Lady Dougan, U.S. Coordinator and Director, Department of State, to Mr. Richard Colino, Director General, INTELSAT, requesting an INTELSAT consultation for PAS-1, the first PanAmSat satellite. Successful completion of the INTELSAT consultation for PAS-1 is reflected in AP-11-3E, INTELSAT Assembly of Parties Record of the Eleventh (Extraordinary) Meeting, dated April 1987. Moreover, PanAmSat's initial authorization applied only to service between the United States and Peru.

¹⁶ From "Welcome to Columbia Communications Corporation," <http://www.tdrs.com>, October 27, 1997.

¹⁷ Testimony of Kenneth Gross, President Columbia Communications Corp., Before the House Subcommittee on Telecommunications, Trade, and Consumer Affairs of the House Commerce Committee, September 30, 1997. See also GAO, *op. cit.*, pp. 32-3.

B. Restrictions on Independent Satellite Systems Vary by Type of Traffic.

Competitive conditions can vary greatly depending on the origin and destination of international telecommunications traffic involved and on the type of traffic involved. Four types of traffic can be distinguished: international traffic that originates or terminates on the public switched telephone network (IPSN traffic); traffic arising from special business services, such as VSAT networks; full time video traffic, which is often receive only; and occasional video traffic.

The first of these types of traffic is of the greatest concern to the PTTs, because it is the closest to their core business. Video traffic is typically of less concern because, as Professor Schwartz notes, PTTs often do not handle video distribution. Moreover, an independent satellite system serving video markets within a country is much less of a bypass threat than a system that carries telephony traffic. The ground infrastructure that supports video traffic typically is not well suited to bypass and presents little if any threat to a PTT monopoly. This is particularly true if the video traffic is receive only, in which case there need be no method of transmitting from the country to the satellite. Nor does the independent systems' carriage of video traffic enable customers to establish a benchmark for comparison to the PTT's telephone rates and service.

Thus, independent satellite systems' carriage of video traffic is less threatening to PTTs than their carriage of telephony traffic, and it is video traffic that accounts for the success of the independent systems. PanAmSat currently provides full time C-band video service in 128 countries, full time Ku-band service in 42 countries, occasional use transmit-receive video service in 48 countries, international digital services in 42 countries, and services related to public switched telephony in only 8 countries.¹⁸ Video traffic is

¹⁸ Based on information submitted by PanAmSat in response to a request of the FCC, see letter from Henry Goldberg to Regina Keeney, February 6, 1998. C-band transmissions require larger ground antennas but are less susceptible to interference than Ku-band service. Thus, C-band service is better suited for delivering signals to

about 80% of PanAmSat's revenue; business services make up most of the remaining 20%, less than 1% is telephony.¹⁹ Orion too carries primarily video traffic.²⁰ In contrast, 50% of INTELSAT's traffic was IPSN.²¹ Independent systems generally have not been able to carry IPSN traffic, which is of primary interest to the PTTs.

C. PTTs do not face the same competitive threat from fiber optic cable.

In recent years, a great deal of IPSN traffic has moved to fiber optic cable. Fiber optic cable has significant cost and quality advantages over satellite in carrying telephony traffic. It is worth noting, however, that often the fiber optic cables used for international telephony are also part owned by the PTTs. According to the GAO, "many fiber optic cables are owned by the monopoly telephone companies within many nations (typically also the signatories to INTELSAT)."²²

Moreover, fiber optic cable generally does not pose the same bypass threat to PTTs that satellite services do. Fiber optic cables that are owned in significant part by PTTs generally operate as INTELSAT does. They sell services to the PTT and do not market directly to end users in foreign countries. End users in foreign countries cannot use their facilities for bypass, nor can they use their rates to establish benchmarks for comparison to the rates and service of the PTT.

Some fiber optic cables are privately-owned and will deal directly with end users. Examples include PTAT, which connects the United States,

large customers, such as cable television systems. Ku-band is better suited for direct-to-home transmissions.

¹⁹ Glen Dickson, "As Technologies Grow, So Grows PanAmSat," *Broadcasting & Cable*, v. 127, n. 35, August 25, 1997, p. 44.

²⁰ Peter J. Brown, "Orion on End-To-End Run," *Broadcasting & Cable*, v. 127, n. 35, August 25, 1997, p. 52.

²¹ Video accounted for 26% of INTELSAT's traffic, business services for 18%, and cable restoration and maritime services for 6%. See INTELSAT's 1996 *Annual Report* and "Overview" information from INTELSAT's website, <http://www.intelsat.int/cmc/info/intelsat.htm>.

²² GAO, op. cit., p. 38.

Ireland, and the United Kingdom, and FLAG, which connects the United Kingdom, Spain, Italy, Egypt, the UAE, India, Malaysia, Thailand, Hong Kong, China, Korea, and Japan. These cables will market their services to end users, but they can directly serve only a limited number of points, so many end users cannot reach them without using the services of the PTT. Thus, these cables also are not as effective as a bypass threat as are satellites, which are more easily accessible from virtually an unlimited number of points in any given country.

Finally, many countries still must use satellites for some or all of their international communication needs. Some countries are not served by fiber optic cable; Table A-1 lists such countries that are INTELSAT members.²³ These countries are generally less developed, and many of them are on the African continent. Although they account for a small share of international telecommunications, the amount of traffic to and from these countries is not trivial. In 1996, U.S. carriers retained about \$214 million in revenue for telephone service to or from these countries. Total revenue from these services, which includes earnings of non-U.S. carriers, was much larger.

These countries represent the most extreme cases of satellite dependence, but for various reasons other countries also depend on satellite. Such countries include landlocked countries that fiber optic cables can only reach through complex inefficient routings and countries, such as India, where only part of the country can be reached through fiber optic cable.²⁴ Other countries that have fiber optic connections that are idle, such as Guatemala. Many countries not on the list still are reached primarily through satellite service. For example, the bulk of active circuits from the United States to Thailand and Hungary are satellite circuits.²⁵ Moreover,

²³ FCC circuit data identify a number of geographic entities that are not INTELSAT members and do not have any non-satellite international circuits. Many of these entities, such as French Polynesia, are not INTELSAT members because they are not independent countries.

²⁴ Comments of WorldCom, Inc., In the Matter of Comsat Corporation, Before the Federal Communications Commission, File No. 60-SAT-ISP-97, June 16, 1997, p. 6.

²⁵ Pioneer Consulting, "Assessment of International Telecommunications Infrastructure Access," January 22, 1998.

many countries have only a single cable landing. Those countries must rely on satellite carriers to provide back up services. Customers pay to have satellite circuits available, so telephone service is not interrupted if there is a cable failure. Thus, the list of satellite dependent countries in Table A-1 understates the reliance on satellite transmissions in international telephony.

D. Many restrictions even remain on access to video traffic.

Independent satellite systems faced fewer restrictions from INTELSAT and its signatories in video than in telephony. Nonetheless, in many cases PTTs and their governments have erected significant regulatory and legal barriers to the carriage of video traffic. Although such restrictions are not as common as they once were, some continue to exist.²⁶ As a result, the services that independent systems can offer in many countries are limited. For example, Columbia's service in South Korea is limited to a single earth station located on a U.S. military base and inaccessible from other parts of the country.²⁷ According to a recent FCC Order

Legal barriers to entry in many countries make it difficult for a United States satellite service provider to begin providing services in the full-time video services market. Historically, the most significant entry barrier in international telecommunications has been obtaining an operating agreement with the monopoly telecommunications service provider before providing service to a particular country. In the case of United States satellite service providers, a significant legal barrier to entry continues to be authorization to provide service in a particular country, including the authority to transmit and

²⁶ GAO, op. cit., p. 39.

²⁷ "Comments of Capital Cities/ABC, Inc., CBS Inc., National Broadcasting Company, Inc. and Turner Broadcasting System, Inc.," Before the Federal Communications Commission In the Matter of Comsat Corporation, RM-7913, filed January 17, 1997, pp. 16-17.

receive from an earth station within a country (sometimes referred to as landing rights).²⁸

India presents an example of such a barrier. PanAmSat currently provides C-band video service in India, but it is prevented from providing Ku-band video service, which is used for direct to home (DTH) transmission. India currently forbids any company from dealing in DTH services in the country.²⁹ At the same time, Videsh Sanchar Nigam Ltd., (VSNL) the Indian INTELSAT signatory, has announced plans to provide DTH video and data services using a planned INTELSAT Ku band satellite. VSNL operates under the over all control of the Indian Ministry of Communications and its major shareholder is the Indian government.³⁰ According to one source, "VSNL's monopoly over external communications for voice and data till 2004 would give it unhindered market access and continuity of services, which would not be possible with any other operators."³¹

E. Although helpful, WTO negotiations have not solved the market access problem.

The United States has long pursued the goal of increasing access to world telecommunications markets, to enable U.S. and other companies to compete in those markets. It has pursued that goal principally through the World Trade Organization (WTO). These efforts have realized a substantial degree of success. Early in 1997, the WTO concluded three years of negotiations on market access for basic telecommunications with the agreement of many of its members to greatly expand access to their markets.

Despite the gains realized through the WTO, however, significant market access problems continue. Not all countries belong to the WTO.

²⁸ Federal Communications Commission, In the Matter of the Application of Comsat Corporation, File No., 14-SAT-ISP-97 Petition for Partial Relief From the Current Regulatory Treatment of Comsat World Systems' Video and Audio Services, ORDER by the Chief International Bureau, Released: August 14, 1997, p. 11.

²⁹ See Indian Ministry of Communications, "Notification," New Delhi, July 16, 1997.

³⁰ This information is from the VSNL website, <http://www.vsnl.net.in>.

³¹ "VSNL, INTELSAT Join Hands to Tap DTH Market," *The Business Standard*, New Delhi, January 28, 1998.

Moreover, of the 120 members of the WTO, only 69 have made commitments to increase market access in telecommunications. (These are called GBT commitments, for the Group on Basic Telecommunications.) Those commitments are often incomplete. For example, in satellite services, only 41 of the 69 countries have guaranteed full access for satellite service suppliers before 2003; 13 guarantee full access, but not until 2003 or later; 6 only will guarantee partial market access; and 13 of the 69 countries have made no commitment to increase access in satellite services. Moreover, the enforcement of WTO agreements often involves a long, difficult, and unpredictable process. Thus, WTO negotiations may reduce PTTs' ability to restrict market access but are unlikely to eliminate it in the foreseeable future.

IV. INTELSAT Still Has Significant Power in Many Markets.

A. Markets served by INTELSAT.

The first step in determining the existence of market power is to define the relevant markets. The paradigm normally used by economists in defining markets, and endorsed by the U.S. antitrust agencies in their *Horizontal Merger Guidelines*, would define the sale of a service in a given area as a separate market if a firm that was, and would remain, the sole supplier of that service in that area could profitably charge a price above the competitive level.³² The key concept in market definition is a consideration of the purchasers' ability to substitute between different products or services. If purchasers could easily react to an increase in price above the competitive level by switching to other services, or the same service in other areas, then the super-competitive price would not be profitable. If purchasers are not easily able to switch and enough of them have to continue buying the service to make the super-competitive price profitable, then the service is a relevant market.

³² Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, Washington, D. C., April 2, 1992.

Defining markets in this way shows that INTELSAT serves many different markets. These markets differ by the origins and destinations of the communications being transported. For example, a customer for satellite circuits to communicate between the United States and Chad will typically not be able to substitute circuits between the United States and Denmark. Thus, INTELSAT markets should be defined in terms of specific countries served.

INTELSAT markets also differ by the type of service provided. This paper will consider two specific types of INTELSAT markets: those involving ISPN traffic and those involving video traffic. Purchasers wishing ISPN service, which will be referred to as telephony, generally cannot easily substitute other types of service if prices are too high.³³ Nor can purchasers of video services readily substitute other services. Moreover, as will be described below, there are different types of video service and they are in different markets.

The question of whether INTELSAT has market power must be considered in the context of specific markets. In recent years, INTELSAT has encountered increased competition, both from fiber optic cable and from independent satellite systems, and this competition has eroded its power in some markets. In other markets, however, this competition has not been effective, and INTELSAT continues to have significant power.

B. INTELSAT retains market power in telephony on several routes.

In telephony, fiber optic cable provides effective competition to satellite on some routes.³⁴ INTELSAT signatories, however, may continue to have significant market power, if they control access to the cable. Moreover, fiber optic cable does not serve all countries. Table A-1 lists INTELSAT members that still are not served by fiber optic cables. There are 41 such countries, of

³³ This paragraph considers only the ability of purchasers to substitute between services. Satellite systems may be able to switch capacity between telephony, video, and other services.

³⁴ GAO, op. cit., p. 37.

which 29 are on the African continent. These countries, which generally have low per capita incomes, are often called thin route countries because of the relatively low volumes of telecommunications traffic between them and other countries. These low volumes have made the routes relatively unattractive for fiber optic cable. International satellite telephony traffic is increasingly focusing on these countries. For example, in 1996 Comsat had more full time voice/data half circuits from the U.S. mainland to Africa than to Europe.³⁵

INTELSAT's market power is not limited to countries in Table A-1. As explained above, in many cases, a country still must use satellite for international telephony, even though it is served by fiber optic cable. For example, if a country has only one cable landing, customers in that country must pay to have satellite circuits available as back-up so telephone service is not disrupted in the event of cable failure.

The countries where INTELSAT has the greatest market power are often countries where gaining market access is most difficult and where the abuse of monopoly power apparently is particularly severe. The thin route countries in Table A-1 often are ones where the United States has had the least success in opening up markets through the WTO. Of the 41 countries, only 31 are in the WTO, only 4 have made commitments to increase market access in telecommunications, and only 2 have made commitments to allow full market access in satellite services.

Moreover, the PTTs in these countries often are performing very badly. They charge extremely high prices; a recent study found that in low-income countries, signatory mark-ups over the price they pay INTELSAT for bandwidth average about 1100%.³⁶ Table A-1 shows the waiting time for phone service in each of these countries. In many of these countries, consumers have had to wait years for phone service. These long waiting times suggest that the monopolies in these countries are taking advantage of their

³⁵ FCC, "Statistics of Communications Common Carriers," Washington, D. C. 1996/1997 edition, p. 187.

³⁶ L. Waverman, "An Analysis of the Concept of Universal Service As Applied to INTELSAT," Law and Economics Consulting Group, April 1997, p. 14.

position to render poor service and that an increase in competition in these countries could bring enormous benefits to local consumers.

Poorly performing monopolies present profitable opportunities to potential entrants, if they are allowed to take advantage of them. Thus, expansion of market access in these countries would benefit both their own consumers and the U.S. firms allowed to enter and compete.

C. INTELSAT has market power in several markets for video services.

Fiber optic cable offers little competition to satellite in video services. Satellite's ability to send a transmission simultaneously to every point in a large area, and to receive transmissions from any point in a large area, gives it an enormous advantage over fiber-optic in video.³⁷ A recent FCC order states "fiber-optic cables are not a cost-efficient means to transmit video at this point."³⁸ Thus, competition in international video services primarily will be between satellite systems.

Markets for video services are differentiated by origins and destinations served and by type of service. Many satellite carriers serve just regional markets; only a limited number provide transoceanic service. Table 2 shows INTELSAT shares of the capacity of satellite systems providing service across the Atlantic, Pacific, and Indian Oceans. INTELSAT has over 54% of Transatlantic capacity, about 71% of Transindian capacity, and over 68% of Transpacific capacity. As described below these large shares are associated with significant power in some video service markets.

³⁷ GAO, op. cit. p. 38; see also the comments of major purchasers of these services, "Comments of Capital Cities/ABC, Inc., CBS Inc., National Broadcasting Company, Inc. and Turner Broadcasting System, Inc.," Before the Federal Communications Commission In the Matter of Comsat Corporation, op. cit., p. 20.

³⁸ Federal Communications Commission, In the Matter of the Application of Comsat Corporation, File No., 14-SAT-ISP-97 Petition for Partial Relief From the Current Regulatory Treatment of Comsat World Systems' Video and Audio Services, ORDER by the Chief International Bureau, Released: August 14, 1997.

In considering competition in satellite video services, it is important to distinguish between full-time and occasional service. Full-time service is generally used to transmit program materials. It may involve leasing satellite capacity for many years. It also includes shorter leases, of one week to several months, for the coverage of special events, such as the Olympics. Occasional video services are used for coverage of fast-breaking news stories and sports and entertainment events. Occasional service may be ordered on short notice and in very small increments. Usually there is a minimum ten minute order, with ordering increments of one minute after that. Origin and termination points for occasional video services may change from day to day.³⁹ The two services are priced differently. Full-time video often costs around \$100,000 per month; occasional costs from \$600 to \$1000 per hour.⁴⁰ For most customers, full time and occasional services are not substitutes for each other. They are separate relevant markets, and competition in them must be analyzed separately.⁴¹

³⁹ For a discussion of the differences between these services, see "Comments of Capital Cities/ABC, Inc., CBS Inc., National Broadcasting Company, Inc. and Turner Broadcasting System, Inc.," Before the Federal Communications Commission In the Matter of Comsat Corporation, op. cit., pp. 7-8.

⁴⁰ U.S. Department of Commerce, "U.S. Industry and Trade Outlook 1998: Telecommunications Services," Washington, D. C., 1998, p. 30-19.

⁴¹ This approach is consistent with that in Federal Communications Commission, August 14, 1997, op. cit.
